

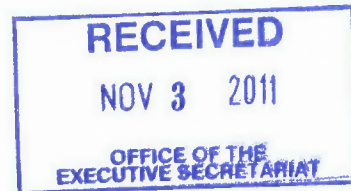


Paul D. Hagemeyer
Vice President - Regulatory Compliance

October 25, 2011

VIA EMAIL and Certified Mail

The Honorable Lisa Jackson
Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460



Dear Administrator Jackson:

Chesapeake Energy Corporation ("Chesapeake") is a leader in domestic natural gas production. We are the second largest natural gas producer and the most active driller of new oil and natural gas wells in the United States. As most of this drilling has occurred in shale formations, we are the most frequent user of hydraulic fracturing completion procedures in the world. As a result, we and all other oil and gas producers in the country are very interested in the current study that Congress directed the U.S. Environmental Protection Agency ("EPA") to undertake, examining the relationship between hydraulic fracturing and drinking water resources (the "Study"). In this regard, on October 20, 2011 several oil and gas trade organizations, including the Independent Petroleum Association of America ("IPAA"), sent a letter to EPA expressing concern about the lack of transparency and technical flaws in the development of the Study's methodology and its subsequent implementation (a copy of this letter is enclosed for your convenience).

In addition, the Science Advisory Board (SAB)'s review of the Draft Study Plan identified multiple deficiencies that, based on our observations, appear to have been carried forward into the implementation of the Study. These included the following:

"The SAB also finds that the Study Plan provides inadequate detail on how to address the overall research questions."

"The SAB finds that the Study Plan provides inadequate detail on how to address the overall research questions presented in Table 2 (see Appendix B) and that EPA should develop more focused research questions that could be answered within the budget and time constraints of the project."

"The SAB finds that the Study Plan provides limited detail on anticipated data acquisition, analysis, management, and storage (including model simulation results), and recommends that EPA revise the draft Study Plan to include such details."

Chesapeake shares the concerns expressed by the trade associations and the SAB regarding the Study, and would like to expand on the matters that they raised based on our direct involvement with the Study and cooperative communications with your staff.

We appreciate that the EPA is giving this investigation a very high priority, and that the EPA project team is being pressed to get Study results ready for review as quickly as possible. Some of the issues highlighted by the trade associations (and this letter) are likely created or exacerbated by those pressures. Nevertheless, the Study must be done properly or it will not have credibility with the public or with stakeholders.

Chesapeake has expended significant resources to provide the best available information to EPA in an effort to assist the progress and development of the Study with the intent it would be based upon sound science. In association with many others in the industry, Chesapeake has participated in and made presentations during the EPA Technical Workshops, provided comments on the overall *Draft Plan to Study the Potential Impacts of Hydraulic Fracturing on Drinking Water Resources* (Draft Study Plan), provided comments to the Science Advisory Board (SAB) Draft Study Plan review, and participated in stakeholder meetings. We have also volunteered a prospective study site in northwest Louisiana located within the Haynesville Shale play, and we operate numerous wells in Bradford County, Pennsylvania, which is the location of one of the retrospective study areas.

On the prospective study site specifically, we have attempted to work with EPA in developing what had hoped would be a scientifically sound plan. This effort has included the following: site visits; weekly conference calls; multiple face-to-face meetings; review and commenting on documents; and the development of considerable ancillary documentation (e.g. research on water well records, compilation of weekly meeting minutes and tracking of action items, development of communication plans, etc).

During our discussions with EPA regarding both the voluntary prospective study and the retrospective study in which we are involved, Chesapeake has observed significant technical and procedural flaws in the Study protocol that will result in indefensible Study results. EPA's attempt to implement the Study without a publicly reviewed, approved, and finalized Study Plan has resulted in confusion as to the scope and intent of the Study. Likewise, the lack of similarly vetted site specific quality assurance project plans which include approved laboratory analytical methods and sample verification will result in indefensible results. Because of these deficiencies, along with others outlined below, the merits of the Study's findings will be seriously eroded and the effort will fall far short of EPA's goal and Congress' mandate.

Our sincere desire is that this important Study be conducted under the highest scientific standards. Based upon what we have been able to discern about EPA's process and approach, our highest concerns are as follows:

- 1. There is no final version of the Study Plan to guide EPA's staff and inform stakeholders on the actual work scope and specific goals EPA is attempting to achieve**

In February 2011, EPA released the Draft Study Plan. Since that time, the EPA has been sampling and conducting research activities at several sites despite the fact that the Draft Study Plan has never been finalized. The lack of a final Study Plan has led to unclear study parameters and appears to be causing confusion as to what, specifically, the Study is evaluating and how that evaluation should be occurring. It remains unclear whether the Study will focus solely on the hydraulic fracturing process (in line with Congress' directive) or be expanded to include other elements of shale gas development.

For example, after offering to include a site within the Haynesville Shale play as a prospective case study, Chesapeake worked closely with EPA staff to identify candidate sites. Though we disagreed, EPA staff asserted that the Study would evaluate the "life cycle" of a natural gas well. To this end, EPA staff expressed the desire to monitor groundwater while the earthwork required to construct a well pad was taking place. Therefore EPA and Chesapeake staff focused on identifying a site where no construction had taken place. During this selection process, EPA staff dismissed several ideal candidate sites because the well pads had already been constructed.

On September 27, 2011, in your formal response to comments submitted by the Science Advisory Board ("SAB"), you clearly stated that the Study will be focused only on water resources as they relate to hydraulic fracturing activities and "well drilling practices *per se* are outside the scope of this study." After you issued that statement, your staff adjusted the scope of the prospective study to exclude the pad construction process.

As an additional example of the confusion over the overall scope of the investigation, the EPA prospective study staff has changed stance on sampling surface waters in the study area several times throughout our discussions.

These troubling uncertainties in work scope are the predictable result of attempting to execute the Study activities without a final Study Plan. It is apparent EPA staff and officials remain confused over the scope, methodology and goals of the Study. Absent a comprehensive and well-communicated Study Plan that has been thoroughly and publicly reviewed, revised, and released to all affected stakeholders, this confusion will continue to make it difficult, if not impossible, for EPA to conduct a scientifically-sound Study.

2 The Quality Assurance Project Plans ("QAPP") for the on-going work at individual sites have not been provided to stakeholders for review and comment nor have they been made public.

During our regularly scheduled meetings with the EPA Study team concerning the Haynesville Shale prospective site, Chesapeake was informed that EPA views the QAPP documents as "fluid", subject to significant, discretionary changes and (but for Chesapeake's lone prospective site) immune from any stakeholder input. We were given the opportunity to review the QAPP for the prospective Haynesville study and provided the EPA with over 130 substantive comments to the document. EPA's rationale for accepting some of Chesapeake's comments and rejecting others has not been shared with us. Nonetheless, EPA

is progressing with sampling and project research at both of these study areas with no established work methods or scope and no established process for review and comment by involved stakeholders.

With respect to the retroactive study, we have been given no opportunity to review or give input into the QAPP and know of no other stakeholder involvement in the process. EPA has merely provided us a list of 40 domestic water wells that EPA plans to sample, a schedule for the sampling activities, and a list of analytical methods to be used. When we requested the QAPP for the retrospective site, EPA officials refused to provide it notwithstanding EPA's continued stated commitment to use a "transparent, peer-reviewed process."¹ Furthermore, during subsequent communications with EPA, we were informed that the list of compounds to be tested may not be finalized and could change - not only before the first sampling event, but even for subsequent sampling events.

This approach is certainly not consistent with the stated Study goals of "transparency" and "good science". In fact, such specific testing information should have been included in the finalized Study Plan, had it ever been finalized before the Study actually began.

3 The EPA intends to use internal non-standard, non-peer reviewed and non-EPA approved analytical methods that are not reproducible or verifiable.

Chesapeake has requested from EPA documentation of the analytical methodology to be used for the prospective case study portion of the Study. In response, EPA indicated they will use the Robert S. Kerr Standard Operating Procedures ("RSKSOP") methodologies. The following disclaimer is included regarding each and every RSKSOP analytical method to be used by EPA:

"THIS IS NOT AN OFFICIAL EPA APPROVED METHOD. This document has not been through the Agency's peer review process or EPA ORD clearance process."²

Based on our review, not only are these methods inappropriate for the Study, but we are not aware of a commercial laboratory in the United States that conducts the anticipated suite of analyses using them. The resulting data EPA will create using these methods will not be reproducible or defensible, which again will erode the merits of whatever conclusions are drawn from the data. Likewise, any historical laboratory data that has been gathered for the retrospective sites will not be directly comparable to the Study analytical data – potentially discounting hundreds of data points that could inform the Study.

EPA should employ the highest level of analytical methods for this Study—methods that EPA itself requires of other entities conducting investigations under its jurisdiction. In fact, the use of the RSKSOP methodologies appears to directly contradict the Congressional mandate that, in part, ordered EPA to observe existing quality assurance principles: "...in

¹ Id.

² RSKSOP-175, Sample Preparation and Calculations for Dissolved Gas Analysis in Water Samples Using a GC Headspace Equilibration Technique. Oct. 2010. Rev. 5

carrying out the study, which should be prepared in accordance with the Agency's quality assurance principles."

4 The EPA plans to use confidential sampling sites not revealed to stakeholders.

Last week, we were informed by EPA staff that at least one sample location in the Bradford County, Pennsylvania retrospective study is confidential. It is unknown if there are additional confidential locations in this portion of the Study, nor is it known if there are other such sites that are included in the retrospective or prospective study sites across the country. Regardless, the collection of samples at even one site withheld from stakeholders is not defensible and contradicts Congress' directive and the Agency's stated commitment to transparency. Not informing stakeholders of all sampling sites that will be included in the Study prevents us from duplicating samples to be collected to show analytical repeatability. Likewise, we question EPA's ability to credibly publish data from an undisclosed location(s).

5 The retrospective study does not allow for affected industry stakeholders to split samples for verification.

Although EPA announced the general locations of the retrospective studies in June 2011³, specific operators were not publicly identified or contacted at that time. Furthermore, we have been in weekly contact with EPA for the past several months; however, we were only provided official notice of Chesapeake's inclusion in the Bradford County study on October 3, 2011. Despite this late notice, we have been given no project specific QAPP or other work plans. EPA did advise us informally that sampling would begin the week of November 24, 2011. However, during a subsequent meeting on October 11, 2011, EPA informed us that the original sample dates EPA provided were incorrect and that sampling would commence a month earlier, during the week of October 24, 2011.

Since EPA is using unapproved and unrepeatable analytical methods, it is imperative that affected industry stakeholders are present to split samples to ensure the validity of the Study by using EPA approved methods (as discussed above). Without an established schedule and access to the sampling locations, industry stakeholders are prevented from duplicating samples to substantiate the analytic findings.

6 The EPA's selection of wells to be sampled at retrospective study sites will clearly bias the results.

When it authorized the Study, Congress insisted on the highest standards of scientific integrity. Despite this imperative, the residential supply wells EPA has selected as the basis for sampling are too narrow and will bias the study. Based on our review of the 40 sites EPA

³ EPA Identifies Case Studies for Hydraulic Fracturing Study / Agency to conduct field work in various regions of the country starting this summer (6/23/2011)
<http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/57d665864627766f852578b8005c8813!OpenDocument>

plans to test in Bradford County, Pennsylvania, all have had some complaint of impact from gas industry operations in their area. No control samples are planned (apparently) from owners who have experienced no problems. This approach therefore begins with a biased data set and would be expected to yield skewed and unscientific results.

Our experiences with the study process supports deficiencies identified in SAB's review of the Draft Study Plan and the general comments made by the trade associations. Chesapeake stands ready to meet with you and your staff to discuss and resolve our concerns and the concerns voiced by others. We urge EPA to cease its current data collection activities until final site-specific study plans and project-specific quality assurance plans have been developed with meaningful stakeholder (including industry) input and appropriate external peer-review. Likewise, any and all data collected to date by EPA should be evaluated against the final Study Plan to ensure its value and appropriateness in meeting the goals of the Study. Chesapeake is prepared to meet as soon as possible to help ensure that this highly significant Study proceeds in a transparent, scientifically-sound manner.

I appreciate your attention to this matter and look forward to your response.

Sincerely,

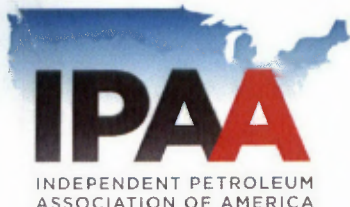
A handwritten signature in black ink, appearing to read "Paul D. Hagemeyer", with a stylized flourish at the end.

Paul D. Hagemeyer

PDH:rr

Enclosure

cc: Dr. Robert Puls
Dr. Paul Anastas



US Oil & Gas Association
ADVOCATE FOR THE OIL & GAS INDUSTRY



Sent by Email

October 20, 2011

The Honorable Lisa Jackson
Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Jackson:

We, the undersigned organizations, write today to express our great concern about the protocol U.S. Environmental Protection Agency's (EPA) is apparently using in its planned study on the relationship between hydraulic fracturing and drinking water resources (the "Study"). This Study has the potential for enormous impacts on citizens, government agencies, non-governmental organizations (NGOs), and all economic sectors. It is for this reason that, in Fiscal Year 2010, Congress directed EPA to conduct such a study "using a credible approach that relies on the best available science, as well as independent sources of information." Our organizations support the Congressional request and the corresponding mandate to use "a transparent, peer-reviewed process" as that is the only approach that can produce deliverables based on sound science and "ensure the validity and accuracy of the data." Furthermore, we believe if the study is conducted in this way, it will finally put to bed the public questions and concerns that initiated the perceived need for the Study originally.

However, we understand that the Agency has moved forward with data collection for the Study, ignoring both its commitment to and a Congressional direction to ensure transparency and stakeholder input, as discussed below. In light of this lack of transparency, we urge you to finalize and make public the Study plan and related quality assurance plans before moving ahead with the Study. As we discuss further below, because samples gathered before the time that the Study plan is made final will not have been gathered according to a publicly available Study plan or testing procedures, and therefore the validity of the data will be in question, we urge you either postpone such sampling or prohibit the use of any such samples.

We appreciate your express commitment to transparency and scientific integrity as articulated during your confirmation hearing, pledging that under your leadership EPA would “operate with unparalleled transparency and openness.” We also echo the sentiment of the Agency’s Draft Scientific Integrity Policy of August 5, 2011 (the “Scientific Integrity Policy”) that “[t]he ability to pursue the Agency’s mission...depends upon the integrity of the science on which we rely.” Of course, the Agency’s commitment to transparency and stakeholder input is not only general in nature, in its draft study plan released on February 7, 2011 (the “Draft Study Plan”), EPA made the following commitment related to stakeholder input:

“Stakeholder input has played, and will continue to play, an important role in the development of the hydraulic fracturing study plan and the research it will involve. EPA has implemented a strategy that engages stakeholders in dialogue and provides opportunities for input on the study scope and case study locations. The strategy also provides a means for exchanging information with experts on technical issues.”

In response to this commitment, various stakeholders have supported EPA’s Study effort and expended significant resources in an attempt to provide EPA with the best available information that could be used to conduct their research. We understand that participation has included, but has not been limited to, the following activities:

- Participation in early stakeholder meetings;
- Delivering presentations and abstracts during the Study’s technical workshops;
- Submittal of Draft Study Plan comments;
- Submittal of Science Advisory Board (SAB) Draft Study Plan Review comments;
- Volunteering prospective study sites, coordinating with EPA’s contractors, and assisting in the current development of the associated Quality Assurance Project Plan (QAPP).

Transparency and stakeholder input are particularly important as the Draft Study Plan calls for both retrospective and prospective case studies which will include sampling of pre- and post-treatment produced waters at fracking sites. The Draft Study Plan indicates that, for each case study, “EPA will write and approve a QAPP before the start of any new data collection[.]”

We are deeply concerned that, despite the directive from Congress and EPA’s statements in its Draft Study Plan, actions currently being undertaken by Agency staff are in direct opposition to these commitments. Importantly, despite the lack of a final study plan, Agency officials began data collection as early as August 2011 by issuing a data request letter to nine (9) operators and collecting field samples at a number of retrospective study sites, including Bradford County, Pennsylvania. This issue is crucial to the integrity of the Study since, without an approved and appropriate protocol and, more importantly, without clear Study goals, it will be difficult to ascertain the quality and appropriateness of any of the data collected, samples obtained, and conclusions reached.

The EPA has stated that the risks identified above are mitigated in the development and approval of project specific QAPPs. However, it is our understanding that the EPA views the QAPPs as “dynamic” documents subject to change at their discretion, which is why the Agency has not

released the documents to the public or stakeholders. In this, EPA appears to be acting against internal guidance documents and Congress' request for the Study to be conducted using peer reviewed processes. EPA's actions belie the Scientific Integrity Policy's core principle of "ensuring that scientific studies used to support policy or regulatory decisions undergo appropriate levels of independent peer review." Moreover, EPA's Peer Review Handbook clearly acknowledges benefit of a peer review process throughout the life cycle of the work product, stating:

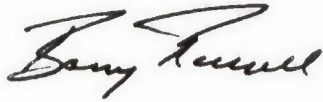
"There may be substantial incremental benefit to conducting more than one peer review during the whole process of work product development, particularly where it involves complex tasks, has decision branching points, or could be expected to produce controversial findings. In addition, early review could be beneficial at the stage of research design or data collection planning where the product involves extensive primary data collection."

Appropriate peer review might show, for example, that a majority of the methods the EPA has proposed for use during the retrospective and prospective studies are not approved or promulgated EPA methods, or other scientific protocol, which make it impossible for stakeholders to independently validate and ensure the accuracy of the data. When stakeholders attempted to raise these concerns with EPA staff and get access to EPA's testing procedures, the stakeholders were informed that this information will not be released nor will it be subject to any external peer review. In addition to blocking access to EPA's testing procedures, EPA staff also made clear the following:

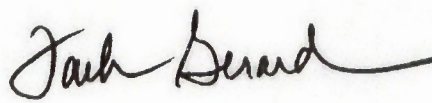
- Analysis of samples collected at fracking sites will occur at EPA testing facilities as opposed to independent third-party laboratories, using unapproved protocol;
- For retrospective study sites, sampling locations are being selected based on homeowner complaints with no public explanation as to how such a selection process might bias the results; and
- Landowner agreements for access to testing sites are restricted to EPA officials and may prevent operators from obtaining duplicate samples to perform their own duplicate testing.

Clearly, the actions outlined above call EPA's claims of commitment to the scientific process, public transparency, and stakeholder input into question. Stakeholders are cooperating to the best of their ability. However, utilizing a case study approach without appropriate quality assurance and independent testing severely jeopardizes the credibility of any ultimate findings. We request that the Agency honor its public commitments and halt any data collection or field activity until a final study plan is approved and appropriate peer review and public comment on testing protocols and the QAPPs have taken place. The undersigned will continue to support EPA's effort to conduct a balanced study based on sound scientific principles and, to that end, we appreciate your attention to these critical matters so the credibility of this project isn't put into question at the initial stages.

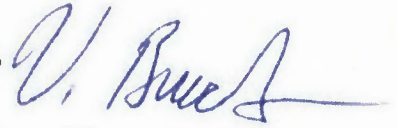
Sincerely,



Barry Russell
President and Chief
Executive Officer
IPAA



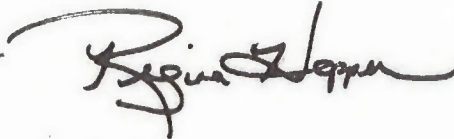
Jack N. Gerard
President and Chief
Executive Officer
API



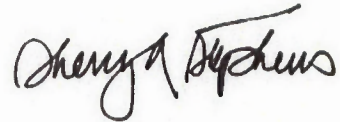
Bruce Thompson
President
AXPC



Albert Modiano
President
USOGA



Regina Hopper
President and Chief
Executive Officer
ANGA



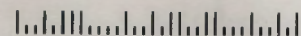
Sherry Stephens
President
PESA

Cc: Paul T. Anastas, PhD.

Assistant Administrator for Office of Research and Development (ORD) and the Science
Advisor



Chesapeake Energy Corporation
P.O. Box 18496 • Oklahoma City, OK 73154-0496



Honorable Lisa Jackson
US Env. Protection Agency
Ariel Rios Bldg
1200 Pennsylvania Ave NW
Washington, Dc 20460